

SOLANO IRRIGATION DISTRICT

PROPOSITION 13 AGRICULTURAL
FEASIBILITY STUDY GRANT PROPOSAL

**SPILL REDUCTION
FEASIBILITY STUDY**

February 2002

SUMMERS ENGINEERING
CONSULTING ENGINEERS
HANFORD, CALIFORNIA

Consolidated Water Use Efficiency 2002 PSP

Proposal Part One:

A. Project Information Form

1. Applying for (select one): ☐ (a) Prop 13 Urban Water Conservation Capital Outlay Grant
☒ (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant
☐ (c) DWR Water Use Efficiency Project
2. Principal applicant (Organization or affiliation): Solano Irrigation District
3. Project Title: Spill Reduction Feasibility Study
4. Person authorized to sign and submit proposal:
- | | |
|-----------------|--|
| Name, title | Robert Isaac, Secretary/Manager |
| Mailing address | 508 Elmira Road
Vacaville, CA 95687 |
| Telephone | 1-800-675-3833-x16 |
| Fax. | 707-448-7347 |
| E-mail | risaac@sidwater.org |
5. Contact person (if different):
- | | |
|------------------|--|
| Name, title. | Suzanne Butterfield, Assistant Manager |
| Mailing address. | 508 Elmira Road
Vacaville, CA 95687 |
| Telephone | 1-800-675-3833-x11 |
| Fax. | 707-448-7347 |
| E-mail | sbutterfield@sidwater.org |
6. Funds requested (dollar amount): \$89,000
7. Applicant funds pledged (dollar amount): \$ 0
8. Total project costs (dollar amount): \$89,000
9. Estimated total quantifiable project benefits (dollar amount): NA – To Be Determined
- Percentage of benefit to be accrued by applicant versus percentage to be accrued by CALFED or others: Unknown

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)**

10. Estimated annual amount of water to be saved (acre-feet):

To be determined by
the study (possibly
7,500 af/year)

Estimated total amount of water to be saved (acre-feet):

To be determined

Over ___ years

Estimated benefits to be realized in terms of water quality,
instream flow, other:

Reduced demand from
regional water supply

11. Duration of project (month/year to month/year):

10/02 to 10/03

12. State Assembly District where the project is to be conducted:

8th

13. State Senate District where the project is to be conducted:

4th

14. Congressional district(s) where the project is to be conducted:

3rd

15. County where the project is to be conducted:

Solano County

16. Date most recent Urban Water Management Plan submitted
to the Department of Water Resources:

NA

17. Type of applicant (select one):

Prop 13 Urban Grants and Prop 13

Agricultural Feasibility Study Grants:

☐ (a) city

☐ (b) county

☐ (c) city and county

☐ (d) joint power authority

☒ (e) other political subdivision of the State,
including public water district

☐ (f) incorporated mutual water company

DWR WUE Projects: the above
entities (a) through (f) or:

☐ (g) investor-owned utility

☐ (h) non-profit organization

☐ (i) tribe

☐ (j) university

☐ (k) state agency

18. Project focus:
- ☐ (l) federal agency
- ☒ (a) agricultural
- ☐ (b) urban

Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)

19. Project type (select one):
Prop 13 Urban Grant or Prop 13
Agricultural Feasibility Study Grant
capital outlay project related to:
- ☐ (a) implementation of Urban Best
Management Practices
- ☒ (b) implementation of Agricultural Efficient
Water Management Practices
- ☐ (c) implementation of Quantifiable
Objectives (include QO number(s))
-
- ☐ (d) other (specify)
-

- DWR WUE Project related to:
- ☐ (e) implementation of Urban Best
Management Practices
- ☐ (f) implementation of Agricultural Efficient
Water Management Practices
- ☐ (g) implementation of Quantifiable
Objectives (include QO number(s))
- ☐ (h) innovative projects (initial
investigation of new technologies,
methodologies, approaches, or
institutional frameworks)
- ☐ (i) research or pilot projects
- ☐ (j) education or public information
programs
- ☐ (k) other (specify)
-

20. Do the actions in this proposal involve
physical changes in land use, or
potential future changes in land use?
- ☐ (a) yes
- ☒ (b) no

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One
B. Signature Page**

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant; and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

 /S
Signature

Robert Isaac, Secretary/Manager
Name and title

 2/22/02
Date

PROPOSAL PART TWO

Project Summary

Solano Irrigation District (SID) is a 72,000 acre district located in Solano County, north of the Sacramento/San Joaquin Delta (see Figure 1). The district is a member unit of the Solano County Flood Control and Water Conservation District and receives its primary water supply from the Solano Project. The Solano Project consists of Monticello Dam, Lake Berryessa, the Putah Diversion Dam on Putah Creek, and the Putah South Canal, the conveyance facility of the Solano Project which delivers the surface water supply from Putah Creek to the member units.

In a typical year, SID delivers approximately 140,000 acre feet of water for irrigation. The total quantity of all operational spills is unknown, but based on measurements at some of the major spills over the last two years, it is estimated that at least 7,500 acre feet of water is lost from district facilities each year. The proposed study will analyze the open channel water conveyance facilities and operations of SID to determine the cost and benefits of installing automatic control gates (and other improvements) to reduce operational spills. The study will identify the facilities that contribute to operational spills, determine the best means and potential improvements to reduce the spills, estimate the cost of such improvements, and determine the quantity of water that will be conserved. The improvements that will be considered are upstream and downstream control gates and real-time flow monitoring. The estimated cost of the proposed study is \$89,000.

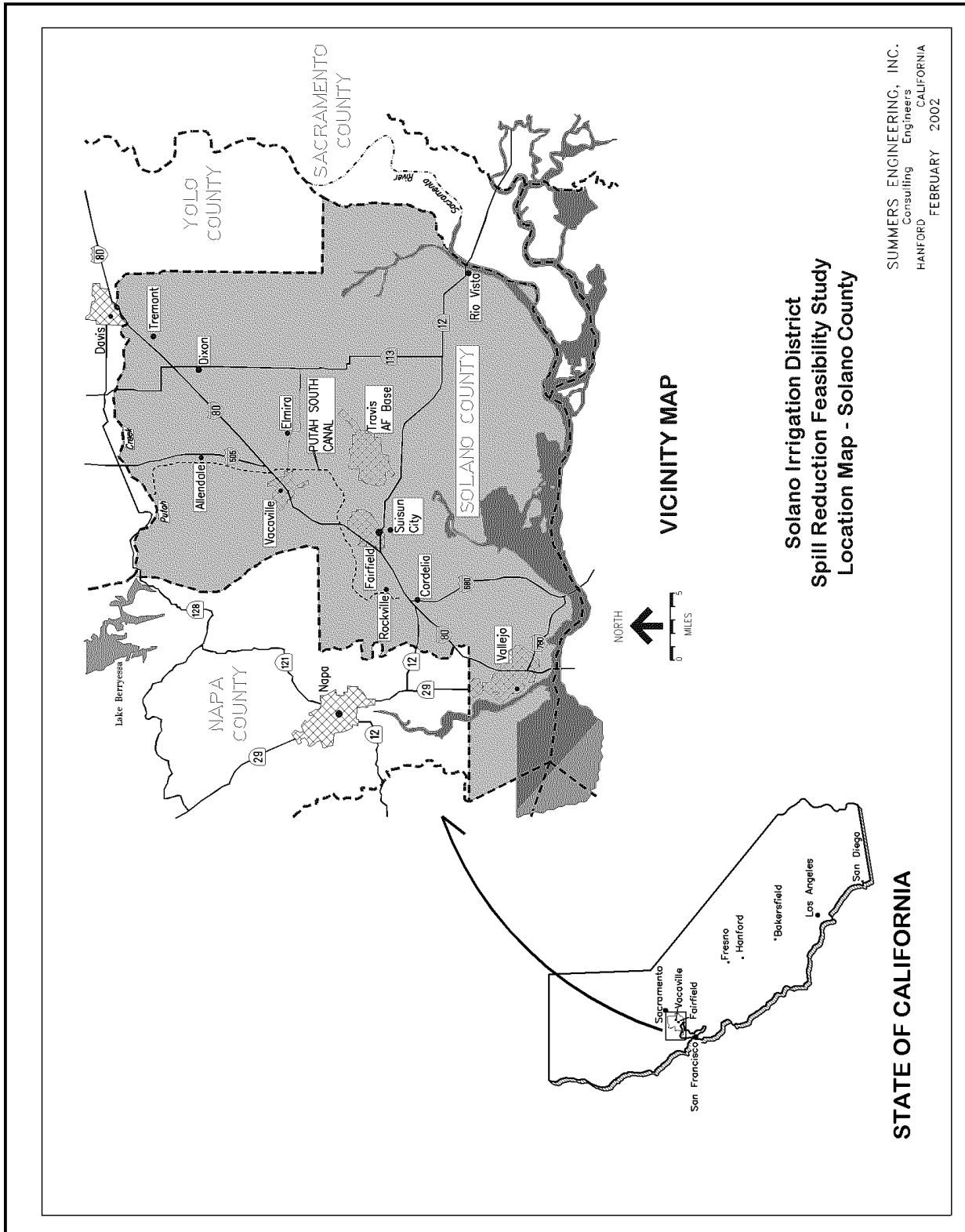
The results of the proposed study should contribute to providing long-term diversion flexibility by increasing the water supply for beneficial uses, (Targeted Benefit Number 51 for Sub-Region 6 of CalFed's Quantifiable Objectives).

A. Scope of Work: Relevance and Importance

1. Nature, scope, and objectives of the project:

- Nature: The proposed project is a feasibility study to determine the costs and benefits of improving the operational flexibility of SID water conveyance facilities. In a typical year, it is estimated SID spills a minimum of 7,500 acre feet of water through operational spills. Conservation of part or all of the spills would reduce the district's demand on the regional water supply.
- Scope of Work (Task List):
 1. Compile current flow, demand, and spill data for all major distribution facilities.
 2. Rank facilities according to their contribution to operational spills.
 3. Identify facility upgrades and operational changes that can be applied to reduce spills. This will include control gate automation and real-time flow monitoring.
 4. Link district facility with appropriate improvement/modification.
 5. Estimate cost to implement facility improvements and determine potential water conserved through spill reductions.

Figure 1: Solano County Location Map



6. Identify best course of action for the district.
 7. Compile report detailing the study and its findings.
 8. Administer project, including overhead, secretarial services, progress reporting, and invoicing.
- Objectives: The objectives of the proposed project are:
 1. To determine what facility improvements and operational changes can be made to reduce the water lost through operational spills.
 2. Estimate the cost and benefits of such improvements.
 3. Make recommendations as to what improvements should be implemented.

2. Project Need: The ongoing population growth and environmental water use in the State of California will continue to put added pressure on agricultural water suppliers to prudently manage their existing water supplies. The availability of agricultural water supplies is likely to be reduced in the future and will result in a greater emphasis on efficient water management practices. SID is aware that a significant amount of water is lost from the district through operational spills, but the exact quantity and source of these spills are still being identified. The proposed study will summarize the amount of water lost through spills and investigate the feasibility of implementing various improvements to reduce and recover these losses.

The proposed study is located in the southern Sacramento Valley (CalFed Region 6). CalFed has indicated the need for long-term diversion flexibility as a priority in this region (Targeted Benefit Number 51). The proposed study will identify options available to reduce operational spills within SID by up to 7,500 acre feet (or more) a year. The implementation of improvements will free up this water for diversions to other beneficial uses.

B. Scope of Work: Technical/Scientific Merit, Feasibility, Monitoring and Assessment

1. Methods, procedures, and facilities:

The feasibility of reducing/recovering spills from SID distribution facilities will be determined as follows:

1. Collect and Review Flow Data: Flow and spill data from SID water conveyance facilities will be collected and compiled. SID records flow rates at its facilities and for all irrigation deliveries, and has been monitoring many of the existing operational spills over the past two years. From this information, a detailed summary of operational spills will be prepared. If additional flow information is required, temporary flow meters may be installed at SID facility spills.
2. Facility Ranking: SID canals will be ranked according to contribution to spills (determined from flow and spill records and operational staff recommendations) and potential for improvements (determined by facility characteristics and

geography). Existing structure/facility drawings will be reviewed and field surveys will be made as necessary to identify potential for improvement.

3. Identify Improvement Options: Types of facility modifications and operational changes will be identified according facility characteristics, hydraulics, and site specific circumstances. These may include upstream control automatic gates, downstream control automatic gates, real-time flow metering, and other water control measures. All proposed modifications will be characterized according to the structural, flow-rate, and head requirements, as well as their implementability.
4. Link Facility and Improvements: The facilities ranked highly in Item 2 will be coupled with the potential improvements identified in Item 3 that will yield the most reduction in operational spills.
5. Benefit/Cost Analysis: The estimate of cost for each facility improvement or modification identified in Item 4 will be made and compared to the estimated benefit. Costs will be determined from estimated quantities required to implement structural improvements, as applicable, as well as actual cost from similar projects in the area. Benefits will be determined based on the value of the water conserved through spill reductions.
6. Identify Best Course of Action: Recommendations for facility improvements will be made according to the benefit to cost ratios determined in Item 5.

2. Task List and Schedule:

Task	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Task Cos
1. Collect and Compile Flow and Spill Data													\$5,500
2. Rank Facilities by Contribution to Spills													\$5,500
3. Identify Improvement Options													\$4,000
4. Link Facility and Improvement													\$20,000
5. Estimate Benefits and Costs													\$16,000
6. Identify Best Course of Action													\$8,000
7. Compile Report													\$17,200
8. Project Administration													\$12,800
Quarterly Expenditure	\$39,800			\$12,800			\$16,000			\$20,400			\$89,000

3. Monitoring and assessment. Not Applicable (Agricultural Feasibility Study)

4. Preliminary Plans and Specifications and Certification Statements. Not Applicable (Agricultural Feasibility Study)

C. Qualifications of the Applicants and Cooperators.

The applicant for the proposed study is Solano Irrigation District. Susan Butterfield, Assistant Manager will be the project manager. Engineering services and data analysis for the proposed study will be performed by the District Engineer, Summers Engineering, Inc. (resume attached).

D. Benefits and Costs.

1. Budget Breakdown and Justification.

Item	Description	Amount	Units	Qty	Total Cost
a.	Labor and Salaries				
a.1	Flow and Spill Data Collection	250	\$/day	6	\$1,500
a.2	Field Review of Facilities	250	\$/day	6	\$1,500
a.7	District Review of Report	400	\$/day	3	\$1,200
a.8	Project Administration	300	\$/day	16	\$4,800
c.	Benefits	(included in Salaries at 30%)			
d.	Travel	NA			
e.	Supplies and Expendables	(included in overhead)			
f.	Services and Consultants				
f.1	Engineering - Flow and Spill Analysis	800	\$/day	5	4000
f.2	Engineering - Facility Ranking	800	\$/day	5	4000
f.3	Engineering - Identify Improvement Options	800	\$/day	5	4000
f.4.a	Survey Facilities for Improvement Options	1200	\$/day	10	12000
f.4.b	Engineering - Link Facility w/ Improvement	800	\$/day	10	\$8,000
f.5	Engineering - Estimate Benefits and Costs	800	\$/day	20	\$16,000
f.6	Engineering - Identify Best Course of Action	800	\$/day	10	\$8,000
f.7	Engineering - Compile Report	800	\$/day	20	\$16,000
g.	Equipment	NA			
h.	Other Direct Costs	NA			
i.	Subtotal				\$81,000
j.	Indirect Costs				
j.1.	Overhead, including office supplies, invoicing, secretarial services	10	%		\$8,000
Total:					\$89,000

2. Cost-Sharing. No cost sharing is proposed for this study.

3. Potential Benefits to be Realized and Information to be Gained

The proposed study is inspired by the knowledge that water discharged through operational spills (estimated at a minimum of 7,500 acre feet annually) leaves SID facilities, and that, currently, SID has no means to reduce or recover these spills. The proposed study will quantify the amount of water lost to spills and determine the options available to reduce and/or recover these spills. An estimate of the quantity of water that will be conserved and an estimate of the cost for implementing facility improvements will be determined. A recommended course of action for SID will be provided.

4. Benefit Realized and Information Gained versus Costs

The proposed study will determine the amount of water lost to SID through operational spills, what actions SID should take to recover these spills and how much these actions will cost. Aside from the immeasurable environmental value water conservation provides to the regional ecosystem, improved system efficiency provides a significant economic benefit to SID. Assuming a value for new water at \$200 per acre foot and if the proposed study determines there is a way to conserve 7,500 acre feet annually, the potential value of the annual savings would be \$1,500,000.

E. Outreach, Community Involvement and Acceptance

The potential community involvement and acceptance of operational spill reduction/recovery will be evaluated during the proposed study. Informal discussions with Main Praire Water District (an adjoining district that receives tail water and spills from SID) regarding the possibility of SID implementing programs to reduce spills. Currently there is no known opposition to any action that will reduce spills or conserve water. The proposed study or the implementation of its probable outcome are not likely to impact a significant number of people or organizations, no new jobs or other social impacts will be realized.

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ENGINEERING STAFF

JOSEPH B. SUMMERS,
Chairman of the Board

Education: University of Iowa, 1948, B.S.C.E.
University of Colorado, 1951, M.S.C.E.

Registered Civil Engineer	California	No.	8922
Registered Civil Engineer	Arizona	No.	5820
Registered Civil Engineer	Nevada	No.	2570
Registered Agricultural Engineer	California	No.	70

JOSEPH C. MCGAHAN,
President/Principal Engineer Registered Civil Engineer California No. 26307

Education: California State Polytechnic College, 1970, B.S.
California Institute of Technology, 1971, M.S.

Experience: 30 years with Summers Engineering, Inc.

ROGER L. REYNOLDS,
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Education: University of California, Davis, 1972, B.S.C.E.

Experience: 28 years with Summers Engineering, Inc.

BRIAN J. SKAGGS,
Civil Engineer Registered Civil Engineer California No. 37219

Education: California State University, Fresno, 1980, B.S.C.E.
California State University, Fresno, 1988, M.S.C.E.

Experience: 20 years with Summers Engineering, Inc.

SCOTT L. JACOBSON,
Civil Engineer Registered Civil Engineer California No. 51586

Education: Colorado State University, Fort Collins, 1989, B.S.C.E.

Experience: 11 years with Summers Engineering, Inc.

JAMES C. LINNEMAN,
Civil Engineer Registered Civil Engineer California No. 59067

Education: Santa Clara University, Santa Clara, 1995, B.S.C.E.

Experience: 5 years with Summers Engineering, Inc.

SEI uses AutoCAD and has available personnel capable of standard drafting procedures to produce any type of required drawings.

SUMMERS ENGINEERING

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HISTORY OF THE ENGINEERING FIRM

The civil engineering firm of Summers Engineering, Inc. (SEI), was established in April 1962. The firm's principal work has consisted of feasibility studies, drainage studies, water supply studies, groundwater investigations, environmental impact studies, contract negotiations for both water supply and loans, the design, preparation of specifications and supervision of construction of pipelines, wells, canals, drains, pumping plants and miscellaneous municipal facilities. SEI has provided project administration and inspection for construction projects. Other work has consisted of the design of various reinforced concrete structures, roadways, small buildings, and site planning.

SEI is on a retainer basis to numerous water agencies and provides reports on the feasibility, financial analysis, and design of water resource facilities, particularly pipelines, irrigation and drainage works, and rehabilitation of existing facilities.

As consultants to municipalities, SEI provides general engineering services including the design of water storage tanks, water treatment plants, water transmission facilities, and the design review and field inspection for drainage, sewer, and water facilities for proposed developments.

SEI serves as a consultant to federal agencies on water resource matters.

The firm consists of six registered civil engineers, two draftsmen, and support staff.